

What is claimed is:

1. A method of controlling usage of a utility, the method comprising:
 - 5 receiving a representation of a utility service usage at a load;
 - receiving and storing a usage range representation; and
- 10 producing a control signal for use by a utility service interrupter, when said usage is outside of said usage range representation, said control signal being operable to cause said utility service interrupter to interrupt a supply of said utility service to said load.
- 15 2. The method of claim 1 further comprising transmitting said control signal to said utility service interrupter.
3. The method of claim 1 wherein receiving said usage range representation comprises receiving user input specifying said usage range representation.
- 20 4. The method of claim 1 wherein receiving comprises receiving a message from a communications system.
- 25 5. The method of claim 4 wherein receiving comprises extracting said usage range representation from said message according to a network protocol.
6. The method of claim 1 wherein receiving comprises receiving a plurality of representations of said utility service usage representing said utility service usage at said load.

7. The method of claim 6 wherein receiving and storing comprises receiving and storing a plurality of usage range representations.

5 8. The method of claim 6 wherein producing said control signal comprises producing a derived representation from said plurality of representations of said utility service usage and producing said control signal when said derived representation is outside of said usage range representation.

10 9. The method of claim 7 wherein producing said control signal comprises comparing said representations of said utility service usage with respective usage range representations and producing said control signal when a set of representations of said utility service usage is outside of a corresponding set of usage range representations.

15 10. The method of claim 1 further comprising storing said representation of said utility service usage.

20 11. The method of claim 10 further comprising displaying said representation of said utility service usage.

12. The method of claim 1 further comprising storing an indication of whether or not said control signal is active.

25 13. The method of claim 12 further comprising displaying said indication.

14. The method of claim 1 further comprising transmitting said representation of said utility service usage to a remote location.

30 15. A computer readable medium for providing instruction codes executable by a programmable device, for directing said programmable device to:

receive a representation of a utility service usage at a load;

receive and store a usage range representation; and

5 produce a control signal for use by a utility service interrupter, when said usage is outside of said usage range representation, said control signal being operable to cause said utility service interrupter to interrupt a supply of said utility service to said load.

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16. A computer data signal embodied in a carrier wave, the signal comprising code segments for directing a programmable device to:

receive a representation of a utility service usage at a load;

15 receive and store a usage range representation; and

produce a control signal for use by a utility service interrupter, when said usage is outside of said usage range representation, said control signal being operable to cause said utility service interrupter to interrupt a supply of said utility service to said load.

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17. An apparatus for controlling usage of a utility, the apparatus comprising:

25 a communications device operable to receive a representation of utility service usage at a load and operable to receive a usage range representation;

30 a data storage device operable to store said usage range representation; and

a controller, in communication with said communications device and said data storage device, said controller being operable to produce a control signal for use by a utility service interrupter, when said usage is outside of said usage range representation, said control signal being operable to cause said utility service interrupter to interrupt a supply of said utility service to said load.

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18. The apparatus of claim 17 wherein said controller further comprises a control signal generator operable to produce said control signal.

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19. The apparatus of claim 18 wherein said controller further comprises a processor circuit incorporating said control signal generator.

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20. The apparatus of claim 17 wherein said communications device is operable to transmit said control signal to said utility service interrupter.

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21. The apparatus of claim 17 wherein said communications device is operable to receive user input specifying said usage range representation.

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22. The apparatus of claim 19 wherein said communications device is operable to receive a message from a communications system.

23. The apparatus of claim 22 wherein said processor circuit is operable to extract said usage range representation from said message according to a network protocol.

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24. The apparatus of claim 19 wherein said communications device is operable to receive a plurality of representations of said utility service usage representing said utility service usage at said load, and operable to receive a plurality of usage range representations.

25. The apparatus of claim **24** wherein data storage device is operable to store said plurality of usage range representations.

5 26. The apparatus of claim **24** wherein said processor circuit is operable to produce a derived representation from said plurality of representations of said utility service usage, and operable to cause said control signal generator to produce said control signal when said derived representation is outside of said usage range representation.

10 27. The apparatus of claim **25** wherein said processor circuit is operable to compare said representations of said utility service usage with respective usage range representations and operable to cause said control signal generator to produce said control signal when a set of representations of said utility service usage is outside of a corresponding set of usage range representations.

15 28. The apparatus of claim **17** wherein said data storage device is operable to store said representation of said utility service usage.

20 29. The apparatus of claim **19** further comprising an annunciation device operable to display said representation of said utility service usage.

25 30. The apparatus of claim **29** wherein said data storage device is operable to store an indication of whether or not said control signal is active.

30 31. The apparatus of claim **30** wherein said processor circuit is operable to direct said annunciation device to display said indication.

30 32. The apparatus of claim **17** wherein said communications device is operable to transmit said representation of said utility service usage to a remote location.

33. An apparatus of controlling usage of a utility, the apparatus comprising:

5 a receiving means for receiving a representation of a utility service usage at a load;

10 a receiving and storing means for receiving and storing a usage range representation; and

15 a producing means for producing a control signal for use by a utility service interrupter, when said usage is outside of said usage range representation, said control signal being operable to cause said utility service interrupter to interrupt a supply of said utility service to said load.

15 34. A method of controlling a supply of a utility service to a load, the method comprising:

20 receiving a control signal indicating that a usage of said utility service at said load is outside of a usage range representation; and

25 interrupting the supply of said utility service to said load in response to said control signal.

25 35. The method of claim 34 wherein receiving comprises receiving said control signal at a communications device in communication with a utility service interrupter.

30 36. The method of claim 34 wherein interrupting comprises actuating a valve.

37. The method of claim 34 wherein interrupting comprises actuating a switch.

5 38. The method of claim 34 further comprising producing a representation of said usage of said utility service by said load, for use by a controller operable to produce said control signal.

10 39. The method of claim 38 further comprising transmitting said representation to said controller.

15 40. The method of claim 38 wherein producing comprises measuring said usage of said utility service by said load to produce a measurement value representing said usage of said utility service by said load.

20 41. The method of claim 40 wherein producing comprises producing said representation from said measurement value.

25 42. A computer readable medium for providing instruction codes executable by a programmable device, for directing said programmable device to:
receive a control signal indicating that a usage of said utility service at said load is outside of a usage range representation;
and
interrupt the supply of said utility service to said load in response to said control signal.

30 43. A computer data signal embodied in a carrier wave, the signal comprising code segments for directing a programmable device to:

receive a control signal indicating that a usage of said utility service at said load is outside of a usage range representation; and

5 interrupt the supply of said utility service to said load in response to said control signal.

44. An apparatus for controlling a supply of a utility service to a load, the apparatus comprising:

10 a communications device operable to receive a control signal indicating that a usage of said utility service at said load is outside of a usage range representation; and

15 a utility service interrupter, in communication with said communications device, said utility service interrupter being operable to interrupt the supply of said utility service to said load in response to said control signal.

20 45. The apparatus of claim 44 wherein said utility service interrupter is operable to actuate a valve.

46. The apparatus of claim 44 wherein said utility service interrupter is operable to actuate a switch.

25 47. The apparatus of claim 44 further comprising a processor circuit operable to produce a representation of said usage of said utility service by said load, for use by a controller operable to produce said control signal.

30 48. The apparatus of claim 47 wherein said communications device is operable to transmit said representation to said controller.

5 **49.** The apparatus of claim **47** further comprising a measurement device in communication with said processor circuit, said measurement device being operable to measure said usage of said utility service by said load to produce a measurement value representing said usage of said utility service by said load.

10 **50.** The apparatus of claim **49** wherein said processor circuit is operable to produce said representation from said measurement value.

15 **51.** An apparatus for controlling a supply of a utility service to a load, the apparatus comprising:
 a receiving means for receiving a control signal indicating that a usage of said utility service at said load is outside of a usage range representation; and
 an interrupting means for interrupting the supply of said utility service to said load in response to said control signal.

20 **52.** A method facilitating monitoring of subscriber usage of a utility service, the method comprising:
 producing a measurement of usage of said utility service at a subscriber location; and
 transmitting said measurement from said subscriber location to an entity for monitoring said subscriber usage of said utility service.

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53. A computer readable medium for providing instruction codes executable by a programmable device, for directing said programmable device to:

5 produce a measurement of usage of said utility service at a subscriber location; and

transmit said measurement from said subscriber location to an entity for monitoring said subscriber usage of said utility service.

10 54. A computer data signal embodied in a carrier wave, the signal comprising code segments for directing a programmable device to:

15 produce a measurement of usage of said utility service at a subscriber location; and

transmit said measurement from said subscriber location to an entity for monitoring said subscriber usage of said utility service.

20 55. An apparatus for monitoring usage of a utility service by a subscriber, the apparatus comprising:

25 a utility service measurement device operable to produce a measurement of usage of said utility service at a subscriber location;

30 a transmitter, in communication with said utility service measurement device, operable to transmit said measurement from said subscriber location to an entity for monitoring said subscriber usage of said utility service.

56. An apparatus for monitoring usage of a utility service by a subscriber, the apparatus comprising:

5 a producing means for producing a measurement of usage of said utility service at a subscriber location; and

10 a transmitting means for transmitting said measurement from said subscriber location to an entity for monitoring said subscriber usage of said utility service.

15 57. A method of billing a subscriber for utility service usage, the method comprising:

20 producing a measurement of usage of said utility service at a location;

25 receiving rate information for said utility service;

30 applying said rate information to said measurement to produce a billing value; and

producing a billing signal representing a bill bearing said billing value, for use by an output device at a subscriber location for producing a bill at said subscriber location.

25 58. The method of claim 57 further comprising causing said bill to be printed at said subscriber location, in response to said billing signal.

30 59. The method of claim 57 further comprising causing said bill to be displayed at said subscriber location.

60. The method of claim 57 further comprising causing said bill to be produced at a location designated by said subscriber.

5 61. The method of claim 57 wherein receiving said rate information comprises receiving said rate information at said subscriber location.

10 62. The method of claim 57 wherein applying said rate information comprises applying said rate information at said subscriber location.

15 63. The method of claim 57 further comprising requesting said rate information from a server.

64. The method of claim 63 wherein requesting comprises establishing a communications connection to a remote server.

20 65. The method of claim 57 further comprising transmitting said measurement to a remote server.

66. The method of claim 57 further comprising transmitting a value derived from said measurement to a remote server.

25 67. The method of claim 57 further comprising transmitting utility service usage information to a server.

68. The method of claim 57 further comprising producing and storing a plurality of measurements of usage of said utility service.

30 69. The method of claim 57 further comprising measuring usage of a plurality of utility services, obtaining rate information for at least some of said utility services, applying said rate information to said at least some of said utility services to produce at least some billing values for

said at least some utility services and causing at least some bills to be produced, bearing said at least some billing values.

70. The method of claim 57 further comprising producing said billing signal in response to a request for said bill to be produced.

5 71. A computer readable medium for providing instruction codes executable by a programmable device, for directing said programmable device to:

10 produce a measurement of usage of said utility service at a location;

receive rate information for said utility service;

15 apply said rate information to said measurement to produce a billing value; and

20 produce a billing signal representing a bill bearing said billing value, for use by an output device at a subscriber location for producing a bill at said subscriber location.

72. A computer data signal embodied in a carrier wave, the signal comprising code segments for directing a programmable device to:

25 produce a measurement of usage of said utility service at a location;

receive rate information for said utility service;

30 apply said rate information to said measurement to produce a billing value; and

produce a billing signal representing a bill bearing said billing value, for use by an output device at a subscriber location for producing a bill at said subscriber location.

5 **73.** An apparatus for billing a subscriber for utility service usage, the apparatus comprising:

a utility service measurement device operable to measure said utility service usage at a location;

10 a communications device operable to receive rate information for said utility service; and

15 a processor circuit, in communication with said communications device, said processor circuit operable to apply said rate information to said measurement to produce a billing value and to generate a billing signal representing a bill bearing said billing value, for use by an output device at a subscriber location for producing a bill at said subscriber location.

20 **74.** The apparatus of claim **73** further comprising an annunciation device responsive to said billing signal for producing said bill bearing said billing value.

25 **75.** The apparatus of claim **74** wherein said annunciation device further comprises a printer to print said bill at said location.

30 **76.** The apparatus of claim **74** wherein said annunciation device further comprises a printer at a remote location to print said bill at a remote location.

77. The apparatus of claim 73 wherein said communications device further comprises a receiver operable to receive said rate information at said location.

5 78. The apparatus of claim 73 wherein said processor circuit is operable to apply said rate information at said location.

10 79. The apparatus of claim 73 wherein said communications device is operable to establish communications with a server to request said rate information from said server.

15 80. The apparatus of claim 73 wherein said communications device is operable to establish communications with a remote server to request said rate information from said remote server.

20 81. The apparatus of claim 73 wherein said communications device further comprises a transmitter operable to transmit said measurement to a remote server.

25 82. The apparatus of claim 73 wherein said communications device further comprises a transmitter operable to transmit a value derived from said measurement to a remote server.

83. The apparatus of claim 73 wherein said communications device further comprises a transmitter operable to transmit utility service usage information to a server.

30 84. The apparatus of claim 73 further comprising a data storage device operable to store said measurement of utility service usage.

85. The apparatus of claim 73 further comprising a plurality of utility service measurement devices operable to produce a plurality of measurements of said utility service usage.

5 86. The apparatus of claim 73 further comprising a plurality of utility service measurement devices operable to measure usage of a plurality of utility services.

10 87. The apparatus of claim 86 wherein said communications device is in communication with said plurality of said utility service measurements, and said communications device is operable to obtain rate information for at least some of said utility services.

15 88. The apparatus of claim 87 wherein said processor circuit is operable to apply said rate information to said at least some of said utility service measurements to produce at least some billing values for said at least some utility services.

20 89. The apparatus of claim 88 wherein said annunciation device is operable to cause at least some bills to be produced, bearing said at least some billing values.

25 90. The apparatus of claim 74 wherein said annunciation device is operable to produce said billing signal in response to a request for said bill to be produced.

30 91. An apparatus for billing a subscriber for utility service usage, the apparatus comprising:
 a producing means for producing a measurement of usage of said utility service at a location;

a receiving means for receiving rate information for said utility service;

5 an applying means for applying said rate information to said measurement to produce a billing value; and

10 a producing means for producing a billing signal representing a bill bearing said billing value, for use by an output device at a subscriber location for producing a bill at said subscriber location.

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